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ABSTRACT

The results are reported of a follow-up study conducted on an experimental middle school curriculum initiated by a school district as an alternative to the traditional curriculum. The outcomes of the original experiment were favorable to the experimental curriculum. An evaluation design common to true experiments where subjects are randomized for the control of error was used. The follow-up study, maintaining the original evaluation design, examined longer-range effects of the experimental curriculum and demonstrated the value of the random assignment to treatment making possible valid generalizations and specifications of results. (Author)

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A Follow-Up Study on a True Experiment:

Curriculum Evaluation of a School District's Educational Alternative

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A Follow-Up Study on a True Experiment:

Curriculum Evaluation of a School District's Educational Alternative

Introduction

This paper reports a follow-up evaluation of students who had been exposed to an innovative middle school curriculum for two years. Initially a two-year proposal was funded under Title IV to develop a curriculum for early adolescents that met the needs of students who did not seem to be benefiting from the traditional junior high or middle school curriculum. An evaluation design was developed by the Office of Evaluation Research, at the University of Illinois at Chicago Circle to assess the impact of the experimental curriculum during the two-year life of the project. The curriculum evaluation was designed as a true experiment where subjects were randomized for the control of error.

Clocksville is located in one of the major population growth areas in the United States. Once located on the periphery of a large metropolitan area, it has been plunged into a residential and commercial building boom which has increased its school population by many multiples in the last ten years. With this influx of population a small, identifiable, conservative community has been transformed not only into a large population center integrally tied to the large city from which much of its population came, but also into a school system that is among the three largest in the state. As a result, Clocks-

ville has felt the well known pressures of rapid expansion of staff and facilities while at the same time experiencing the demand for revising traditional curriculum that seemed especially unsuited to students in the light of emphasis on individuality and freedom of choice. The innovative middle school curriculum was developed to respond to this need.

An evaluation of the innovative middle school curriculum was reported in 1975 (hereafter referred to as the evaluation study) which explains the findings in detail (Eash, Sparkis, and Rasher, 1975). Briefly, two groups of students were randomly assigned to experimental and control groups. Students in the experimental groups attended the innovative (Model) school for two years (1972-74), while students in the control group attended the junior high in the attendance zones of the district. Significant findings included:

1. greater parent and community involvement at the Model School than at the control schools;
2. a more "humanistic" setting at the Model School;
3. more positive student perceptions of the learning environment at Model School;
4. more positive self-concepts among Model students;
5. no difference in student achievement among Model and control students;
6. better counseling and student-school staff relationships at Model School;
7. no difference in per pupil costs between Model and the control schools.

Following the conclusion of the two-year program at Model School, the Model School was closed and former Model School students reentered the traditional school setting. Two years later the follow-up study was initiated. This paper will report the residual effects after two years that the Model School program had on its participants and ways in which the program has affected the current high school program.

Design

The follow-up study was designed to focus on the significant findings of the evaluation study.

All remaining experimental and control students who were in the 10th and 11th grade in the two district high schools were included in the follow-up study (N = 233), since these students went directly from the Model School to a high school. Model students currently in 9th grade completed their last year of junior high at another school before starting high school. The fact that these students had to adjust to three different schools within a short period of time could have potentially confounded the follow-up results; for this reason these students were not included in this study. Since the 1972-74 results indicated no differences among student grade levels, this decision was not expected to bias the results.

The measures used in the follow-up study were the same as those used in the previous evaluation--student attitudes toward the learning environment (Anderson and Walberg, 1971), achievement, and self concept (Gordon, 1968). In addition, a random sample of 30 students each from the Model and control

groups were interviewed, as were all teachers who had previously taught at Model School and were now teaching in the traditional schools (N = 15). Fifteen parents of former Model students were also interviewed.

Results

The results of the follow-up study are keyed to the significant findings of the evaluation study.

1. Parent and Community Involvement. All 15 parents interviewed felt that they had been more involved with the Model School than they are at their children's present school. Only two are satisfied with the degree of parent involvement at the present school, and neither of these are currently involved in any school activities. Most parents indicated that they had become involved with the Model School activities because of encouragement by the school staff; since teachers and staff at the present school have not contacted these parents, they have not felt that their involvement is needed or welcomed.

All 15 teachers interviewed also expressed dissatisfaction with the present level of parent involvement at their present schools. The teachers agreed that parental involvement was much more extensive at the Model School.

2. "Humanistic" Setting. Nine teachers felt that students get along with each other at their present schools as well as they did at the Model School; six felt that students got along better at Model. Interestingly, seven of the teachers who felt students got along equally well at both schools added that there

was a better understanding of differences at Model and less fighting and vandalism.

Thiry-two percent of the former Model students felt that students got along equally well at Model and their present school, while the remaining 68% felt students get along better at Model. As found in the evaluation study the smaller size of Model School promoted closer relationships and better communication among students.

3. Student Perceptions of the Learning Environment. The Learning Environment Inventory (LEI) measures 15 aspects (scales) of the student's perception of his or her learning environment. In 1974, Model School students perceived a significantly more positive learning environment on 12 of the 15 LEI scales than did the control students. Table 1 compares the 1974 and 1976 responses of the experimental group and the control group, as well as the 1976 responses of the experimental and control group. No significant differences between the experimental and control group are found in 1976; thus, both groups are perceiving their learning environment similarly. Experimental students in 1976 are perceiving their environment as being significantly higher in speed, favoritism, disorganization, difficulty, apathy, democracy and competitiveness; and significantly lower in cohesiveness, diversity, formality, environment, and goal direction than in 1974. The control group perceives cohesiveness, diversity, formality, environment, friction, and goal direction significantly lower in 1976 than 1974; and

favoritism, cliqueness, satisfaction, disorganization, difficulty, apathy, democracy and competitiveness significantly higher in 1976 than in 1974. These results indicate that perceptions of the Model group tended to move from very positive to slightly negative, while the control students have moved from slightly positive to slightly negative perceptions.

It is interesting to examine some of the areas in which experimental and control students did not both move in the same direction. Experimental students perceived significantly higher speed in 1976; control students did not. Perhaps this difference is due to the fact that Model School fostered a relaxed atmosphere where students were given more individualized assignments. Apparently, at their current schools, students are in learning situations where teachers are inclined to set single group standards for all students.

Control students perceive significantly more satisfaction in 1976 while experimental students perceive about the same. During interviews, several control students remarked that they were pleased with the greater amount of freedom they were permitted in high school, as compared to junior high. Since experimental students were allowed to be more independent in junior high, they are not perceiving much <u>additional</u> freedom and therefore do not indicate an increase in satisfaction. However, the fact that Model students still express high satisfaction, both on the LEI and during interviews, indicates that they are finding their current high schools a challenge and that they are satisfied with the varried curriculum and increased

extracurricular opportunities which these school offer.

4. Student Self-Concept. The Gordon Self-Concept Scale measures seven aspects of student affective growth. In 1974, experimental students rated their teacher/school relationship significantly higher than did control students. Experimental students also perceived themselves as significantly higher in autonomy. Since self-concept measures are resistent to short-term outside influence, we were interested in determining how these measures would be rated following two years at the high school. In Table 2 it is seen that there are no significant differences between the experimental and control groups in 1976 on either the teacher/school or autonomy scales. However, the control students do rate themselves higher in academic adequacy. This is particularly interesting since, as is discussed below, control students are at the same level, and in some cases lower than, experimental students in achievement. Experimental students did not vary in self-concept from 1974 to 1976; in fact the scales were rated almost identically during both years. The control students, however, perceived their teacher/school relationships as being significantly better in 1976 than in 1974 and their academic adequacy significantly higher in 1976 than in 1974.

5. Student Achievement. In 1974, no differences in achievement were found between experimental or control groups on standardized achievement tests. Although achievement tests were not available in 1976, class percentile ranks and grade point averages were available. As seen in Table 2, the difference

between the experimental and control groups in class rank percentile approaches significance ($p < .10$). In fact, at one of the two high schools, experimental students do have significantly higher ($p < .05$) class rank percentiles.

6. Counseling and Student/School Staff Relationships.

A. Counseling Services

Improving counseling services was a major component of the Model School program; thus teachers were asked to compare the counseling services at Model with those at their present schools. Twelve teachers felt the counseling is poorer at their present schools than at Model, one felt the counseling is better now, and two felt it is about the same. Ten teachers rated the present counseling program as mediocre or poor. Six explained that the smaller pupil/teacher ratio at Model facilitated counseling, while five others felt the present counseling is inadequate for the needs and numbers of students in general.

The majority of control (72%) and former Model (77%) students seldom talk with their school counselors; 68% of the former Model students reported that the frequency of contacts with their school counselors is less now than at Model. Previous years' data supports these responses; since frequent contact with school counselors was an integral part of the Model School curriculum, students and counselors met once a week at Model and in some cases, everyday.

B. Student/Teacher Relationships.

Nine teachers felt the teacher/student relationships at their present schools are good, while six felt they are

mediocre or poor. Four teachers felt the teacher/student relationships at Model School and their present school are comparable, while 11 felt they were better at Model.

Forty-one percent of the former Model students and 61% of the control students perceived relationships between students and teachers to be very good or good at their present schools. However, 91% of the former Model students reported that teacher/student relationships were better at Model. Students stated that teachers were more concerned and involved at Model; students and teachers were on a first name basis at Model which facilitated the development of informal personal relationships; and there were fewer teachers and students at Model, so there were more opportunities to know each other.

The frequency of contact for both former Model and control students with teachers other than their classroom teachers varied greatly. However, 86% of all former Model students reported that they talked with other teachers considerably more often at Model.

Discussion and Conclusions

A number of authorities (Campbell and Stanley, Campbell and Cook, Cronbach and Snow, among others) have emphasized the importance of randomization to control error in attribution of results. Curriculum evaluations for a number of reasons have not used randomization of subjects in their designs. This report illustrates the benefits from this design in the follow-up study of the original evaluation and in providing confidence

that the results obtained were true results and not the results of chance or error. The effectiveness of randomization in enabling a comparison of equally constituted groups is illustrated many times throughout the study; for example, when both groups were in the same setting (at their current high schools), both perceived their learning environment similarly. Also, when we began to locate students who had participated in the evaluation study, almost an equal number had moved, dropped out of school, or could not be located.

Many of the extremely positive aspects of the innovative Model School program did not carry over to the high schools, although some of the effects of the program can be observed. The high degree of parent participation was not maintained; this appears to be a loss for the parents and schools alike. The "humanistic" setting of Model School has not been transferred to the high schools; yet, students do appear to get along with each other well at their present schools.

Very little of the learning environment of Model appears in the high school currently. Both experimental and control students are perceiving their learning environment less favorably in 1976 than in 1974, although experimental students show far more dissatisfaction than control students when their current responses are compared to those of 1974.

On the self-concept measures, Model School students have not changed in two years, while control students have improved in their perceptions of teacher/school relations and academic adequacy. However there is a subtle but detectable difference

in student/teacher relationships which the evaluators felt was being expressed by both teachers and experimental and control students. There seems to be a positive feeling and more trust in student/teacher relationships, relationships that are moving in the direction of the interactions which characterized the Model School. It may very well be that the Model School students and teachers are having a carry over effect into the high schools in defining teacher/student relationships. However, the former Model participants have not been able to maintain the superior relationships that did exist at Model.

Control students perceived themselves to be academically more adequate than did the experimental group, yet the achievement data indicates that in actuality the situation is reversed. One explanation of this apparent contradiction is that experimental students were uncertain whether they had in fact learned as much as those students who had been in the traditional setting at all times. During student interviews, several former Model School students stated that while they liked Model School better, they were not certain whether they had learned as much as they would have in a more traditional setting. Added to this, the fact that many control students refer to Model School as "that place where kids got to do anything they wanted for two years" has perhaps made Model students somewhat insecure and uncertain about how much they actually did learn. Parents also reflected these attitudes during interviews. The findings presented here confirm the

fact that education received at Model School was every bit as good as, and in some cases better than, that at the other junior high schools in the District. It is interesting that these differences in achievement have taken two years to become observable; in 1973 and 1974 no differences were found.

The Model School appears to have benefited its students in a variety of ways: cognitively, affectively and socially. Cognitively, former Model students are performing as well as, and in some cases better than, control students. One of the biggest controversies regarding Model School was the question of achievement. Doubts by parents, students and teachers alike were expressed. While the school was viewed as innovative, relaxed, and "fun", serious questions arose regarding whether or not Model students were learning subject matter relevant to their future academic careers. The class rank percentile results help to allay many of these doubts.

Affectively, Model students benefited considerably. They enjoyed their school, its staff, students, curriculum, and activities. They felt an integral part of the school and its policies. Considerable boosts in self-confidence were observed. Students, along with their teachers and parents, felt Model students were more mature and more responsible in their school-work generally. Students took their work seriously and found pleasure in working hard and accomplishing the goals which they set for themselves. New ways of thinking and approaching subject matter were discovered and new areas of inquiry were

explored in a relaxed, friendly atmosphere. Upon leaving Model School and entering more traditional schools, students felt somewhat lost and in some cases inadequate. However, objective measures clearly illustrate the high academic achievement levels of former Model students.

Finally, students benefited socially. Closer relationships with peers and teachers were established that continue today. Parents reported getting along with their children better due to the parents' increased involvement with school activities. Parents felt needed; they were participants rather than unwelcome outsiders. Closer relationships made for increased understanding among parents, teachers, and students and all three of these groups expressed feelings of regret over the closing of Model and the accompanying decline in these relationships. However, many of the Model School participants have been making concerted efforts to maintain some of these social gains made at Model.

There are a number of results from the Model School experiment which should be investigated for their implications for present practice in the junior and senior high school. The results on the guidance system being part of the curriculum, the involvement of parents, and the student involvement in planning curriculum and instruction are three obvious areas of investigation. Few school systems have as solid a base of experimental findings on which to predicate instructional improvement programs. The challenge now lies in developing workable strategies to bring these positive results to fruition for larger numbers of Clocksville students.

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Table 1

Learning Environment Inventory Scores for Experimental (Model) and Control Groups

1974 and 1976

	Experimental Group				Control Group				Differences	
	1974 (N=234)		1976 (N=91)		1974 (N=180)		1976 (N=51)		76 E & 76C	76
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	t	
Cohesiveness	2.91	0.41	2.64	0.34	2.88	0.45	2.69	0.39	-0.74	-5.
Diversity	2.95	0.40	2.20	0.35	2.92	0.35	2.24	0.41	-0.64	-15.
Formality	2.60	0.36	2.25	0.38	2.78	0.39	2.32	0.44	-1.05	-7.
Speed	2.27	0.39	2.54	0.47	2.46	0.51	2.62	0.56	-0.95	5.
Environment	2.93	0.45	2.45	0.39	2.73	0.50	2.44	0.38	0.23	-8.
Friction	2.49	0.45	2.43	0.36	2.72	0.49	2.40	0.42	0.59	-1.
Goal Direction	2.83	0.44	2.30	0.43	2.71	0.44	2.55	0.48	-0.60	-6.
Favoritism	2.04	0.52	2.67	0.54	2.28	0.58	2.70	0.62	-0.36	9.
Cliqueness	2.69	0.40	2.79	0.47	2.74	0.43	2.92	0.53	-1.49	1.
Satisfaction	2.66	0.42	2.73	0.51	2.46	0.45	2.78	0.53	-0.47	1.
Disorganization	2.18	0.49	2.75	0.44	2.30	0.54	2.83	0.59	-0.98	9.
Difficulty	2.37	0.34	2.78	0.45	2.54	0.39	2.76	0.57	0.23	8.
Apathy	2.24	0.53	2.70	0.51	2.44	0.51	2.83	0.49	-1.49	7.
Democratic	2.60	0.38	2.73	0.50	2.42	0.43	2.89	0.56	-1.67	2.
Competitiveness	2.33	0.45	2.75	0.54	2.54	0.49	2.88	0.53	-1.33	7.

*Significant at the .05 probability level.
**Significant at the .01 probability level.
***Significant at the .001 probability level.

Table 1

nvironment Inventory Scores for Experimental (Model) and Control Groups

1974 and 1976

ental Group			Control Group				Differences Between:		
=234) S.D.	1976 (N=91) Mean	S.D.	1974 (N=180) Mean	S.D.	1976 (N=51) Mean	S.D.	76 E & 76C t	76 E & 74 E t	76 C & 74 C t
0.41	2.64	0.34	2.88	0.45	2.69	0.39	-0.74	-5.58***	-2.74**
0.40	2.20	0.35	2.92	0.35	2.24	0.41	-0.64	-15.70***	-11.78***
0.36	2.25	0.38	2.78	0.39	2.32	0.44	-1.05	-7.75***	-7.22***
0.39	2.54	0.47	2.46	0.51	2.62	0.56	-0.95	5.28***	1.94
0.45	2.45	0.39	2.73	0.50	2.44	0.38	0.23	-8.95***	-3.84***
0.45	2.43	0.36	2.72	0.49	2.40	0.42	0.59	-1.14	-4.24***
0.44	2.50	0.43	2.71	0.44	2.55	0.48	-0.60	-6.11***	-2.25*
0.52	2.67	0.54	2.28	0.58	2.70	0.62	-0.36	9.70***	4.50***
0.40	2.79	0.47	2.74	0.43	2.92	0.53	-1.49	1.92	2.50*
0.42	2.73	0.51	2.46	0.45	2.78	0.53	-0.47	1.27	4.30***
0.49	2.75	0.44	2.30	0.54	2.83	0.59	-0.98	9.68***	6.06***
0.34	2.78	0.45	2.54	0.39	2.76	0.57	0.23	8.88***	3.18**
0.53	2.70	0.51	2.44	0.51	2.83	0.49	-1.49	7.10***	4.86***
0.38	2.73	0.50	2.42	0.43	2.89	0.56	-1.67	2.52*	6.42***
0.45	2.75	0.54	2.54	0.49	2.88	0.53	-1.33	7.13***	4.30***

Significant at the .05 probability level.
Significant at the .01 probability level.
Significant at the .001 probability level.

Table 2

Self-Concept Scale, Activity Measure, and Achievement

Scores for Experimental (Model) and Control Groups in 1974 and 1976

	Experimental Group				Control Group				Differences 76 Exp. & 76 Cont.	76
	1974 (N=217)		1976 (N=91)		1974 (N=174)		1976 (N=51)			
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	t	
Self Concept:										
Teacher-School	20.83	3.57	20.99	3.54	19.67	4.06	21.35	3.67	0.57	0
Physical Appearance	25.66	4.64	25.54	4.72	25.05	5.67	26.52	5.69	1.09	-0
Interpersonal Adequacy	56.07	7.66	55.90	8.85	56.55	8.53	58.43	8.18	1.68	-0
Autonomy	29.91	5.07	29.99	5.15	28.32	5.71	29.80	5.30	-0.70	0
Academic Adequacy	20.40	4.04	20.37	4.04	20.49	4.11	21.77	3.49	2.07*	-0
Physical Adequacy	13.76	2.78	13.94	2.31	14.26	2.61	14.44	2.83	1.15	0
Emotions	13.29	3.18	13.27	3.26	13.28	3.13	13.31	3.27	0.07	-0
Achievement										
Grade Point Average	NA	--	3.57	0.72	NA	--	3.42	0.83	-1.51	
Class Rank Percentile	NA	--	55.8	26.8	NA	--	48.9	29.8	-1.85	

*Significant at the .05 probability level.
**Significant at the .01 probability level.

Table 2

lf-Concept Scale, Activity Measure, and Achievement

r Experimental (Model) and Control Groups in 1974 and 1976

erimental Group				Control Group				Differences Between:		
								76 Exp. & 76 Cont.	76 Exp. & 74 Exp.	76 Cont. & 74 Cont.
4 (N=217) n	S.D.	1976 (N=91) Mean	S.D.	1974 (N=174) Mean	S.D.	1976 (N=51) Mean	S.D.	t	t	t
83	3.57	20.99	3.54	19.67	4.06	21.35	3.67	0.57	0.36	2.65**
66	4.64	25.54	4.72	25.05	5.67	26.52	5.69	1.09	-0.21	1.63
07	7.66	55.90	8.85	56.55	8.53	58.43	8.18	1.68	-0.17	1.40
91	5.07	29.99	5.15	28.32	5.71	29.80	5.30	-0.20	0.13	1.65
40	4.04	20.37	4.04	20.49	4.11	21.77	3.49	2.07*	-0.06	2.02*
76	2.78	13.94	2.31	14.26	2.61	14.44	2.83	1.15	0.54	0.42
29	3.18	13.27	3.26	13.28	3.13	13.31	3.27	0.07	-0.05	0.06
	--	3.57	0.72	NA	--	3.42	0.83	-1.51	--	--
	--	55.8	26.8	NA	--	48.9	29.8	-1.85	--	--

*Significant at the .05 probability level.
**Significant at the .01 probability level.